



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

65565 7590 07/14/2008
SUGHRUE-265550
2100 PENNSYLVANIA AVE. NW
WASHINGTON, DC 20037-3213

EXAMINER	
THANGAVELU, KANDASAMY	
ART UNIT	PAPER NUMBER

2123
DATE MAILED: 07/14/2008

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/522,902	10/19/2005	Kokichi Sugihara	Q85926	6660

TITLE OF INVENTION: METHOD OF CALCULATING A WIRE PACKING DIAMETER, APPARATUS THEREFOR, AND PROGRAM THEREFOR

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1440	\$300	\$0	\$1740	10/14/2008

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax **(571)-273-2885**

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

65565 7590 07/14/2008
SUGHRUE-265550
2100 PENNSYLVANIA AVE. NW
WASHINGTON, DC 20037-3213

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/522,902	10/19/2005	Kokichi Sugihara	Q85926	6660
------------	------------	-------------------------	---------------	-------------

TITLE OF INVENTION: METHOD OF CALCULATING A WIRE PACKING DIAMETER, APPARATUS THEREFOR, AND PROGRAM THEREFOR

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1440	\$300	\$0	\$1740	10/14/2008

EXAMINER	ART UNIT	CLASS-SUBCLASS
THANGAVELU, KANDASAMY	2123	703-001000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____
(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____
3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE _____ (B) RESIDENCE: (CITY AND STATE OR COUNTRY) _____

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee
☐ Publication Fee (No small entity discount permitted)
☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
☐ Payment by credit card. Form PTO-2038 is attached.
☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____ Date _____
Typed or printed name _____ Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.**

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/522,902	10/19/2005	Kokichi Sugihara	Q85926	6660
65565	7590	07/14/2008	EXAMINER	
SUGHRUE-265550			THANGAVELU, KANDASAMY	
2100 PENNSYLVANIA AVE. NW			ART UNIT	
WASHINGTON, DC 20037-3213			PAPER NUMBER	

2123
DATE MAILED: 07/14/2008

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 381 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 381 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

Notice of Allowability**Application No.**

10/522,902

Applicant(s)

SUGIHARA ET AL.

Examiner

KANDASAMY THANGAVELU

Art Unit

2123

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 4 April 2008.
2. ☒ The allowed claim(s) is/are 1-8.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some* c) ☐ None of the:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☒ Other Clean Copy of Allowed Claims.

DETAILED ACTION

Introduction

1. This communication is in response to the Applicants' communication dated April 4, 2008. Claims 1-4 and 6-8 were amended. Claims 1-8 of the application are pending.

Examiner's Amendment

2. Authorization for this examiner's amendment was given in a telephone conversation by Mr. Sean Conner on July 7, 2008.

An Examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to the applicants, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

3. In claim 1, Line 1, "A method of calculating"
has been changed to
-- A computer implemented method of calculating --.

In claim 1, Lines 17-25, "a first search controlling step of setting a new target circle which is slightly smaller than the target circle if the insertion trial circle is successfully inserted

Art Unit: 2123

in the space in the target circle during the inserting step, wherein at least one of the plurality of circles protrudes from the new target circle;

executing the searching step and the inserting step while setting the new target circle as the target circle; and

outputting at least the outside diameter of the including circle”

has been changed to

-- wherein, if the insertion trial circle is successfully inserted in the space in the target circle during the inserting step, the method further comprises:

a first search controlling step of setting a new target circle which is slightly smaller than the target circle, wherein at least one of the plurality of circles protrudes from the new target circle;

setting the new target circle as the target circle; and

returning to and executing the searching step, and

wherein, if the insertion trial circle is not successfully inserted in the space in the target circle during the inserting step, the method further comprises outputting at least the outside diameter of the including circle--.

In claim 2, Line 1, “The method according to claim 1”

has been changed to

-- The computer implemented method according to claim 1--.

In claim 3, Line 1, “The method according to claim 1”

has been changed to

-- The computer implemented method according to claim 1--.

In claim 4, Lines 2-3, "the apparatus comprising:

including-circle assuming means"

has been changed to

-- the apparatus comprising:

input means for inputting initial information concerning the plurality of wires,

including-circle assuming means --.

In claim 4, Lines 17-24, "searching means;

first search controlling means in which in a case where the insertion trial circle is successfully inserted in the target circle, a new target circle which is slightly smaller than the target circle is set, wherein at least one of the plurality of circles protrudes from the new target circle, and the search by the searching means is then effected while setting the new target circle as the target circle;

input means for inputting initial information concerning the plurality of wires; and

output means for outputting at least the outside diameter of the including circle"

has been changed to

-- searching means; and

wherein, in a case where the insertion trial circle is successfully inserted in the target circle, the apparatus further comprises:

first search controlling means in which a new target circle which is slightly smaller than the target circle is set, wherein at least one of the plurality of circles protrudes from the new target circle, wherein the new target circle is set as the target circle, and wherein control is returned to the searching means which executes the search, and

wherein, in a case where the insertion trial circle is not successfully inserted in the target circle, the apparatus further comprises output means for outputting at least the outside diameter of the including circle--.

Replace claim 8 with:

8. A computer readable recording medium storing computer executable instructions for executing a method for calculating an outside diameter of a wire packing which is formed by bundling and packing a plurality of wires into the smallest possible circular shape so as not to overlap each other, said method comprising:

an input step of inputting initial information concerning the plurality of wires,
an including-circle assuming step of assuming an including circle which includes a plurality of circles arranged in a plane so as not to overlap each other by assuming that cross-sectional shapes of the plurality of wires are the plurality of circles having diameters corresponding to respective outer shapes thereof;

a target-circle defining step of determining a target circle which has the same center as that of the including circle and is slightly smaller than the including circle, and from which at least one of the plurality of circles protrudes;

a searching step in which the circle protruding from the target circle is set as an insertion trial circle, and positions are searched to which the plurality of circles other than the insertion trial circle can be moved as distantly as possible within the target circle without overlapping each other;

an inserting step of inserting the insertion trial circle in a space in the target circle created by changing the layout of the plurality of circles on the basis of a result of search by the searching means; and

wherein, in a case where the insertion trial circle is successfully inserted in the target circle in the inserting step, the method further comprises:

a first search controlling step in which a new target circle which is slightly smaller than the target circle is set, wherein at least one of the plurality of circles protrudes from the new target circle;

setting the new target circle as the target circle; and

returning and executing the searching step,

wherein, in a case where the insertion trial circle is not successfully inserted in the target circle, the method further comprises an output step of outputting at least the outside diameter of the including circle.

A clean copy of allowed claims is attached.

Reasons for Allowance

4. Claims 1-8 of the application are allowed over prior art of record.

5. The following is an Examiner's statement of reasons for the indication of allowable subject matter:

The closest prior art of record shows:

(1) a method of bundling a wire harness comprising a plurality of wire groups for automotive applications; it is preferred to place at the cross sectional center of the bundle, not at the outside of the bundle, any wires that must be positively shielded from noise or any wires for which it is essential to prevent any contact and shorting with body panels; such wires include live power supply lines directly connected to the battery and twisted wires for audio speakers; the method provides a wire harness that positions specific wires at the cross sectional center of the wire bundle; the plural electrical wires are bundled together by a binding material, so at least one specific wire is at the cross sectional center of the bundle of wires; the wire harness comprises a first binding sheet having opposite surfaces with adhesive characteristics, one surface for binding the specific wire and a second binding sheet for binding the electrical wires with the bound specific wire, so the outside surface of the first binding sheet is attached to the wires other than the specific wire; the wire harness is characterized by inserting a double sided adhesive tape between the selected core wires and the other wires positioned around the selected core wires; one side of the tape adheres to the selected core wires positioned at the wire harness center and the other side adheres to the wires placed around the selected center wires; the outside of the wire harness is bound with an electrical insulation adhesive tape or a colgate tube is fit over the wires to bundle the wire harness (**Shima et al.**, U.S. Patent 5,940,962);

(2) a corrugated tube for use as a cover for a wire harness in a vehicle and a wire harness having such a tube as cover; the tube reduces the wiring space required in the vehicle; the corrugated tube has circumferentially extending corrugations along the entire length of the tube; the tube has at least two first regions having circular cross section and between the two first regions, a second region having a first cross sectional dimension greater than the diameter of the first region and a second cross sectional dimension smaller than the diameter of the first section; the corrugated tube includes transitional regions of varying cross sectional shape connecting the second region to the first regions; the second region has a cross sectional shape that is elliptical, second region of the tube being flattened relative to the first region; the cylindrical first regions of the tube are located adjacent to the connectors at the end of the wire harness; the flattened region of the tube is installed on the floor of the interior of a vehicle, allowing space required for the wire harness in the vehicle to be small; the wire harness in the tube includes a bundle of wires; the corrugated tube is made by blow molding an extruded thermoplastic resin (**Kato**, U.S. Patent 6,051,789); and

(3) a method of manufacturing a waterproof wire harness in which a grommet passing portion of a wire bundle for passing through a grommet for mounting through a hole in a body panel of a vehicle is tied into a waterproof structure; the gap between adjacent wires is closed by a water sealing agent; the bundle of tied wires can be precisely finished into a desired diameter, without a time consuming tape winding operation; the bundle of wires may or may not include wires of different diameters; the method of manufacturing the waterproof harness comprises the steps of: a) providing a plurality of wires; b) providing a coating position at which a water sealing agent in an unsolidified condition is coated on the outer periphery of each wire c)

providing a first mold formed with a groove; d) providing a second mold to be inserted into the groove e) conveying the wires one by one to pass through the coating position while coating the outer periphery of each wire with the water sealing agent; f) throwing the wires coated with the water sealing agent into the groove in the first mold; g) inserting the second mold into the groove h) pressing the wires in the groove such that the unsolidified water sealing agent fills interstices of adjacent wires while solidifying the water sealing agent; i) releasing the second mold from the first mold after the water sealing agent is solidified; the manufacturing is automated, resulting in improved productivity and enhanced waterproof performance(Suzuki, U.S. Patent Application 2003/0006523).

None of these references taken either alone or in combination with the prior art of record discloses a computer implemented method of calculating an outer diameter of a wire packing which is formed by bundling and packing a plurality of wires into a smallest possible circular shape so as not to overlap each other, specifically including:

(Claim 1) "a target-circle defining step of determining a target circle which has the same center as that of the including circle and is slightly smaller than the including circle, and from which at least one of the plurality of circles protrudes;

a searching step of setting the circle protruding from the target circle as insertion trial circle, and searching positions to which the plurality of circles other than the insertion trial circle can be moved as distantly as possible within the target circle without overlapping each other; and

an inserting step of inserting the insertion trial circle in a space in the target circle created by changing a layout of the plurality of circles on the basis of a result of search in the searching step,

wherein, if the insertion trial circle is successfully inserted in the space in the target circle during the inserting step, the method further comprises:

a first search controlling step of setting a new target circle which is slightly smaller than the target circle, wherein at least one of the plurality of circles protrudes from the new target circle;

setting the new target circle as the target circle; and

returning to and executing the searching step” in combination with the remaining elements and features of the claimed invention.

None of these references taken either alone or in combination with the prior art of record discloses an apparatus for calculating an outside diameter of a wire packing which is formed by bundling and packing a plurality of wires into the smallest possible circular shape so as not to overlap each other, specifically including:

(Claim 4) “target-circle defining means for determining a target circle which has the same center as that of the including circle and is slightly smaller than the including circle, and from which at least one of the plurality of circles protrudes;

searching means in which the circle protruding from the target circle is set as an insertion trial circle, and positions are searched to which the plurality of circles other than the insertion

trial circle can be moved as distantly as possible within the target circle without overlapping each other;

inserting means for inserting the insertion trial circle in a space in the target circle created by changing the layout of the plurality of circles on the basis of a result of search by the searching means; and

wherein, in a case where the insertion trial circle is successfully inserted in the target circle, the apparatus further comprises:

first search controlling means in which a new target circle which is slightly smaller than the target circle is set, wherein at least one of the plurality of circles protrudes from the new target circle, wherein the new target circle is set as the target circle, and wherein control is returned to the searching means which executes the search” in combination with the remaining elements and features of the claimed invention.

None of these references taken either alone or in combination with the prior art of record discloses a computer readable recording medium storing computer executable instructions for executing a method for calculating an outside diameter of a wire packing which is formed by bundling and packing a plurality of wires into the smallest possible circular shape so as not to overlap each other, specifically including:

(Claim 8) “a target-circle defining step of determining a target circle which has the same center as that of the including circle and is slightly smaller than the including circle, and from which at least one of the plurality of circles protrudes;

a searching step in which the circle protruding from the target circle is set as an insertion trial circle, and positions are searched to which the plurality of circles other than the insertion trial circle can be moved as distantly as possible within the target circle without overlapping each other;

an inserting step of inserting the insertion trial circle in a space in the target circle created by changing the layout of the plurality of circles on the basis of a result of search by the searching means; and

wherein, in a case where the insertion trial circle is successfully inserted in the target circle in the inserting step, the method further comprises:

a first search controlling step in which a new target circle which is slightly smaller than the target circle is set, wherein at least one of the plurality of circles protrudes from the new target circle;

setting the new target circle as the target circle; and

returning and executing the searching step” in combination with the remaining elements and features of the claimed invention.

6. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Kandasamy Thangavelu whose telephone number is 571-272-3717. The examiner can normally be reached on Monday through Friday from 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Rodriguez, can be reached on 571-272-3753. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to TC 2100 Group receptionist: 571-272-2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Kandasamy Thangavelu/
Examiner, Art Unit 2123
July 7, 2008

